UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,569	04/02/2002	Joel Jacquet	Q68831	4498

23373 7590 04/08/2003

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20037

EXAMINER	
NGUYEN, TUAN N	

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/089,569	JACQUET, JOEL	
	Examiner	Art Unit	
	Tuan N Nguyen	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on 3/6/2003 .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Paul Ip

PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. In respond to applicant's response to Applicant amendment filed 3/6/2003. Claims 1-22 have been amended. The argument is mood in view of the new ground of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-22 are rejected under 35 U.S.C 112, second paragraph, as being indefinite, vague, and confusing for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, for example.

Regarding to claim 1, claim 1 is written in terms of narrative. The claim is written in such a narrative way the claim fails to comply with the means plus function as required under 35 USC 112, 2nd paragraph. The claim recites "a tunable edge-emitting semiconductor laser including a resonant cavity delimited by two reflectors, one which is a fixed reflector and the other of which is a *mobile* reflector, and including an active section with gain of length L1 and a tunable section of length L2, *characterized in* that the total length of the cavity L=L1+L2 is less than or equal to 20um." There is no structural and functional relationship between the elements to conform a tunable edge-emitting semiconductor laser, which render the claims vague and indefinite. It is not clear if the length is based on the designer choice or the equation based on an experimental

result similar with claim 3, which render the claim vague and indefinite. *Ex parte Steigewald, 131 USPQ 74.* Claims 2-22 are rejected base on the same reason.

Claim 19 recites "a method of *fabricating* a tunable edge-emitting semiconductor laser ..., characterized *in that it includes* the following steps: producing a laser die..., fabricating a fixed etched mirror..., mounting the laser die..., producing a mobile reflector on the base to the rear of the laser die." It is not clear if claim 19 is and independent or dependent claim of claim 1. There is insufficient structural and relationship to assemble the tunable edge-emitting semiconductor laser, which render the claims indefinite. Claims 20-22 rejected based on the same reason.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or non-obviousness.

5. Claims 1 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karioja et al. (US 6192059).

With respect to claims 1 Karioja et al. ('059) shows in figures 2a-d, and 3 a tunable semiconductor laser including a resonant cavity by two reflectors (F 2b: 212, 2001, 2002, 200, 206) with a fixed reflector (F 2b: 212, 2001, 204) and a movable reflector (F 2b: 206), including an active section with gain length L1 and a tunable section of length L2 where the total length is < 25um (F 2b: Col 4: 23-26) (Col 1: 50-55). It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.* Since claims 19-20 recites the same or identical elements/limitations it is inherent to use patents ('059) to recite the method of fabricating tunable edge-emitting semiconductor laser, product by process.

With respect to claims 2-4, Karioja et al. disclose continuous tuning range greater than 4nm (Col 5: 9-10). It is obvious that the active section and tunable section has a certain length in order to produce the 30 um or more as specified in claim 4.

With respect to claims 5, 10 and 12, figure 2b shows reflections between mirrors 212 and 2002. It is within the ordinary skill in the art at the time the invention, to provide mirrors with coating ranging from 0-100% reflections. Figure 2b 2001,2002 show that fixed reflector is on front face of active section. Discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.*

With respect to claims 11, 17, and 18, (Col 1: 10-11) disclose the movable reflector is external to the cavity. Column 3 lines 54-60 disclose of the interspace between the mirrors, it is inherent that interspaces is made up of air or gas.

6. Claims 6-9, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karioja et al. (US 6192059) in view of McCelland et al. (US 6201629).

With respect to claims 6-9, and 13-16, Karioja et al. ('059) discloses the above except, the tunable laser is an etched mirror, semiconductor and air, polymer and air, semiconductor and polymer. McCelland et al. ('629) discloses of micro-mechanical mirror system (MEMS) having use semiconductor, polymer (Col 1: 20-43; Col 13: 16), coating with dielectric (Col 17: 50-53), deposit with Nickel (Col 17: 25-30). Air is an inherently mixed within any of the above element. It would have been obvious to one of ordinary skill in the art to provide Karioja et al. ('059) the element as taught or suggested by McCelland et al. ('629).

7. Claims 6-9, 13-16, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karioja et al. (US 6192059) in view of Uenishi Y. et al: "Tunable Laser Diode using a nickel Micromachined External Mirror" Electronics Letters, IEE Stevenage, GB, Vol. 32, no. 13, 20 june 1996 (1996-06-20), pages 1207-1208, XP000965745 ISSN:0013-5194.

With respect to claims 6-10, and 13-16, Karioja et al. ('059) discloses the above except, the tunable laser is an etched mirror, semiconductor and air, polymer and air, semiconductor and polymer. Uenishi Y. et al: discloses of micro-mechanical mirror system (MEMS) using with the above element. It would have been obvious to one of ordinary skill in the art to provide Karioja et al. ('059) the element as taught or suggested by Uenishi Y. et al.

With respect to claims 19-22, Uenishi Y. et al. disclose the fabrication process page 1207.

Citation of Pertinent References

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is cited primarily to show the product of the instant invention.

Fye (US 4839308), Collins et al.(US005363397A), Hsu et al. (US006263002B1), Brosson et al. (US 4920542), Hall et al. (US006201638B1), Lowenhar et al. (US006025939A) tunable laser cavity and the like.

Conclusion

9. The prior art made of record and relied upon is considered pertinent to applicant's discloses.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP 706.07. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (703) 605-0756. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Tuan N. Nguyen

March 28, 2003

PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800